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Prevalence and Outcomes of Exposure to Catastrophic Events Among Athletic Trainers

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Context: Little is known about the prevalence of exposure to catastrophic events or how caring for athletes exposed to catastrophic events can influence burnout in athletic trainers (ATs).

Objective: To assess (1) the prevalence of exposure to catastrophic events, (2) the levels of burnout among ATs who have been exposed to catastrophic events, and (3) the coping strategies they used.

Design: Cross-sectional study.

Setting: Online survey.

Patients or Other Participants: We invited 9881 certified members of the National Athletic Trainers' Association to participate in this study; 1007 surveys were completed, for a response rate of 10.2% (433 men, 572 women, and 2 who preferred not to answer the question).

Main Outcome Measure(s): Participants completed an online survey to assess demographic information, exposure to a catastrophic event, and scores on the Maslach Burnout Inventory-Human Services Survey (MBI-HSS) and the Coping Inventory for Stressful Situations (CISS). Scores on the MBI-HSS (personal accomplishment, depersonalization, and emotional exhaustion subscales) and CISS (avoidance, task, and emotion-oriented subscales) were determined. Two multivariate analyses of variance (one for MBI-HSS and one for CISS) were conducted using the independent variable of group (catastrophic event and no catastrophic event). The α level was set at $P < .05$ for all analyses.

Results: A total of 518 ATs (51.4%) reported providing care to athletes exposed to a catastrophic event and 489 (48.6%) did not. The group that reported providing care for athletes exposed to a catastrophic event had a significantly worse personal accomplishment score (46.1 $\pm$ 6.7) than the group that had never provided such care (44.6 $\pm$ 7.7; $P < .05$). The emotion-oriented score for those who had provided care for athletes exposed to a catastrophic event was 14.3 $\pm$ 4.8 versus 14.9 $\pm$ 4.2 for those who had not ($P < .05$), indicating less use of emotion-oriented coping strategies.

Conclusions: The ATs who provided care to athletes exposed to a catastrophic event could be more likely to suffer from a lack of personal accomplishment and exhibit task and emotion-oriented coping behaviors.

Key Words: coping strategies, burnout, Maslach Burnout Inventory, Coping Inventory for Stressful Situations

Key Points

- More than half of athletic trainers surveyed reported providing care to athletes exposed to a catastrophic incident during an athletic event.
- Athletic trainers who provided care for these athletes perceived a lower level of personal accomplishment, indicating a higher level of burnout.

Athletic trainers (ATs) are often the first to respond to an athlete's injury. Researchers[1,2] have shown that an injury can have negative effects on an athlete's physical and mental health. In addition to the physical impairments, athletes can experience increased stress, symptoms of depression and anxiety, and other mood disorders.[2] Because ATs work closely with injured athletes, they often observe these consequences of injuries and can help the athletes obtain the care they need. However, little is known about how treating these injuries and helping with the associated concerns may cause stress for ATs. Among emergency department nurses, exposure to repeated traumas caused almost one-third to report symptoms of depression and anxiety.[3] Twenty-five percent of the emergency department nurses surveyed experienced symptoms related to traumatic stress disorders. Most alarmingly, 98% of nurses met the criteria for at least 1 of the 3 types of burnout—emotional exhaustion, depersonalization, and personal accomplishment.[4] Almost one-third of all ATs will experience burnout during their careers,[5] so a large number of individuals could suffer the symptoms of burnout as a result of experiencing a catastrophic event.

Although several investigators have explored nurses' reactions to treating patients exposed to a catastrophic event, research pertaining to ATs' responses to injuries and exposures to catastrophic events among athletes is scarce. The National Athletic Trainers' Association (NATA) does not have any information detailing the rates at which ATs experience catastrophic events. However, since 1982, the National Center for Catastrophic Sports Injury Research (NCCSIR) has collected data related to catastrophic events in collegiate and high school athletics. During this 34-year period, 2477 catastrophic illnesses or events were reported at the high school and collegiate levels.[6] *Catastrophic events* were defined as "fatalities, permanent disability injuries, serious injuries (fractured neck or serious head injury) even though the athlete has a full recovery,

temporary or transient paralysis (athlete has no movement for a short time but has a complete recovery), heat stroke due to exercise, or sudden cardiac arrest or sudden cardiac or severe cardiac disruption."[7]

These events were reported only by schools in the National Collegiate Athletic Association and National Federation of State High School Associations; additional events could have occurred at schools that were not members of those organizations. Additionally, the numbers reported could be lower than the actual occurrences if an event was not reported or the school did not have an AT present during the event.[6]

Exposure to catastrophic athletic events could have long-term psychological effects for ATs, but the lack of information on this topic could lead to a decreased ability to provide the social support and care they need to address potential mental health concerns. Research in this area could benefit ATs by identifying possible sources of psychological stress and offering suggestions for effective coping strategies. Therefore, the purpose of our study was to determine (1) the prevalence of catastrophic events in a sample of ATs and (2) burnout rates and (3) coping strategies in ATs who have provided care for athletes involved in a catastrophic event versus ATs who have not.

METHODS

Participants

We e-mailed 9881 randomly selected members of the NATA who were certified by the Board of Certification and asked them to participate in the study. Before their voluntary participation in the study, informed consent was obtained from each person at the start of the survey by having him or her click the *yes to continue to the survey* button. A potential participant who clicked the *no* button was taken to the end of the survey and thanked for his or her time. At any point, the recruit could close the Web browser to discontinue participation. We obtained permission from the university's institutional review board to conduct this study.

Procedures

The survey was deployed using online survey software from Qualtrics (Provo, UT) to collect data. Demographic information (participant's age, sex, number of years working as an AT, and workplace setting) was collected. We collected information without regard to whether an individual had been exposed to a catastrophic incident during an athletic event using the NCCSIR's definition of a catastrophic event (as stated earlier).[7] The participant checked *yes* or *no* to the exposure question in the Qualtrics survey. Additionally, the participant completed the Maslach Burnout Inventory-Human Services Survey (MBI-HSS)[8] and the Coping Inventory for Stressful Situations (CISS).[9] The MBI-HSS, which was created in 1981 by Maslach and Jackson, has 22 questions to measure burnout in 3 dimensions: emotional exhaustion, depersonalization, and personal accomplishment. The 9 items of the emotional exhaustion subscale describe feelings of being emotionally overextended and exhausted by one's work. The depersonalization subscale contains 5 items assessing an unfeeling and impersonal response toward the recipients of one's care (ie, patients). The 8 items of the personal accomplishment subscale describe feelings of competence and achievement in one's work with people. Participants rated the frequency of experiencing feelings related to each subscale using a 7-point scale with the labels of *never*, *a few times a year or less*, *once a month or less*, *a few times a month*, *once a week*, *a few times a week*, and *every day* centered under the numerals 0 through 6. Each scale is scored by summing the numeric answers to each question. For the emotional exhaustion subscale, scores ranged from 0 to 63, with higher scores indicating more emotional exhaustion; for the depersonalization subscale, scores ranged from 0 to 35, with higher scores indicating more depersonalization; and for the personal accomplishment subscale, scores ranged from 0 to 56, with lower scores indicating more personal accomplishment.[10] Tests of internal consistency for the MBI-HSS have reported the Cronbach coefficient α as ranging from 0.71 to 0.90.[4]

The CISS, created by Parker and Endler in 1990, can be used to determine if a person exposed to a stressful situation is more likely to use emotion-oriented, task-oriented, or avoidance-oriented coping mechanisms. The CISS has been shown to have good levels of reliability and validity.[11] The 48 items in the CISS questionnaire have been shortened to a 21-item version of the coping inventory, which we used for this study.[12] This instrument differentiates among 3 types of coping: emotion oriented (emotion focused: 7 items), task oriented (problem focused: 7 items), and avoidant (avoidant emotion or problem focused: 7 items). Respondents are asked to focus on a recently experienced (in the past 6 months) traumatic event and to indicate to what extent the statements are applicable to them, using a 5-point rating scale ranging from *not at all* to *very much*. Sums were calculated for each subscale.

Statistical Analysis

Descriptive statistics were calculated for sex, setting, and level of experience by group. Two separate multivariate analyses of variance (MANOVAs) were conducted with the independent variable group (treated or never treated athletes involved in a catastrophic event). The first MANOVA consisted of the 3 dependent variables on the CISS survey (emotion-related coping, task-related coping, and avoidance). The second MANOVA consisted of the 3 dependent variables on the MBI-HSS (emotional exhaustion, depersonalization, and personal accomplishment). If the overall MANOVA was significant, follow-up univariate analyses of variance (ANOVAs) were conducted to determine which dependent variables were significant between groups. The α level was set at $P < .05$ for all analyses.

RESULTS

Of the 1021 individuals who started the survey, only 1007 provided complete, usable responses for analysis (10.2%). A total of 518 (51.4%) ATs reported providing care for athletes exposed to a catastrophic incident during an athletic event and 489 (48.6%) did not. Demographic data for the entire sample can be found in Table 1.

Table 1. Demographics of Respondents (n = 1007)

	Frequency (%)
Sex	
Male	433 (43.0)
Female	572 (56.8)
Prefer not to answer	2 (0.1)
Experience as an athletic trainer, y	
0–5	382 (37.9)
6–10	221 (21.9)
11–15	131 (26.8)
16+	270 (26.8)
Data missing	3 (0.3)
Current work setting	
College	399 (39.6)
Hospital or clinic	60 (6.0)
Military	5 (0.5)
Occupational health	19 (1.9)
Performing arts	4 (0.4)
Physician's office	16 (1.6)
Professional sports	21 (2.1)
Secondary schools	436 (43.6)
Other	46 (4.6)
Data missing	1 (0.1)
Provided care for athletes exposed to a catastrophic event?	
Yes	518 (51.4)
No	489 (48.6)

The MBI-HSS Scores

The MANOVA for the MBI-HSS scores was significant for the independent variable (treating athletes exposed to a catastrophic event versus never treating athletes exposed to a catastrophic event; $F_{3,1003} = 3.47$, $P = .016$). Follow-up 1-way ANOVAs indicated that 1 dependent variable, personal accomplishment, was different by group ($F_{1,1006} = 10.01$, $P = .002$, $1 - \beta = 0.885$). The emotional exhaustion and depersonalization subscores were not different ($P > .05$). For the personal accomplishment scale, the mean difference between groups was 1.43 points. Descriptive statistics for the MBI-HHS are presented in Table 2.

Responses to each of the 3 subscales of the MBI-HSS were divided into low, moderate, and high scores based on previous research.[8] Frequencies for each subscale and group are shown in Table 3.

High personal accomplishment scores were classified as scores that fell between 0 and 31. Only 37 (3.7%) of the total participants scored high on the personal accomplishment subscale, 16 (43.2%) from the group that had provided care for athletes exposed to a catastrophic event and 21 (56.8%) from the group that had not. *Moderate personal accomplishment scores* were those that fell between 32 and 38. Of the total respondents, 131 (13.0%) reported moderate scores, 56 (42.8%) from the group that had provided care for athletes exposed to a catastrophic event and 75 (57.2%) from the group that had not. *Low personal accomplishment scores* were above 38. Of the total cohort, 839 (83.3%) scored low on the personal accomplishment scale, 446 (53.2%) from the group that had provided care for athletes exposed to a catastrophic event and 393 (46.8%) from the group that had not.

Table 3. Frequencies of Maslach Burnout Subscale Scores by Group and Cohort

Maslach Burnout Subscale Score	Provided Care for Athletes Exposed to a Catastrophic Event? No.		Overall Cohort, n (%)
	Yes	No	
Personal accomplishment			
Low	446	393	839 (83.3)
Moderate	56	75	131 (13.0)
High	16	21	37 (3.7)
Emotional exhaustion			
Low	103	99	202 (20.1)
Moderate	224	195	419 (41.6)
High	191	195	386 (38.3)
Depersonalization			
Low	111	91	202 (20.1)
Moderate	266	242	508 (50.4)
High	141	156	297 (29.5)

Low emotional exhaustion scores were classified as those that fell between 0 and 16. Of the total cohort, 202 (20.1%) scored low on the emotional exhaustion scale, 103 (51.0%) from the group that had provided care for athletes exposed to a catastrophic event and 99 (49.0%) from the group that had not. *Moderate emotional exhaustion scores* fell between 17 and 26. Of the total respondents, 419 (41.6) reported moderate scores, 224 (53.5%) from the group that had provided care for athletes exposed to a catastrophic event and 195 (46.5%) from the group that had not. *High emotional exhaustion scores* were above 27. Of the total participants, 386 (38.3%) scored high on the emotional exhaustion subscale, 191 (49.5%) from the group that had provided care for athletes exposed to a catastrophic event and 195 (50.5%) from the group that had not.

Low depersonalization scores were 6 or less. Of the total cohort, 202 (20.1%) reported low scores, 111 (55.0%) from the group that had provided care for athletes exposed to a catastrophic event and 91 (45.0%) from the group that had not. *Moderate depersonalization scores* ranged from 7 to 12 and accounted for 508 (50.4%) responses. Of those moderate scores, 266 (52.3%) were from the group that provided care for athletes exposed to a catastrophic event and 242 (47.7%) were from the group that did not. Finally, *high depersonalization scores* were those above 13. Of the

Table 2. Descriptive Statistics for the Maslach Burnout Subscale Scores by Group and Cohort (Mean ± SD)

Maslach Burnout Subscale	Provided Care for Athletes Exposed to a Catastrophic Event?		Overall Cohort
	Yes	No	
Personal accomplishment	46.05 ± 6.65	44.62 ± 7.71[a]	45.35 ± 7.21
Emotional exhaustion	24.88 ± 9.85	25.62 ± 10.35	25.24 ± 10.11
Depersonalization	10.59 ± 4.89	11.04 ± 4.98	10.81 ± 4.94

[a] Difference between groups ($P < .05$).

Table 4. Descriptive Statistics for the Coping Inventory Subscale Scores by Group and Cohort (Mean ± SD)

Coping Inventory Subscale	Provided Care for Athletes Exposed to a Catastrophic Event?		Overall Cohort
	Yes	No	
Task	30.44 ± 2.92	29.98 ± 3.49[a]	30.22 ± 3.22
Emotion	14.26 ± 4.75	14.90 ± 4.17[a]	14.57 ± 4.96
Avoidance	16.68 ± 4.48	17.04 ± 4.69	16.85 ± 4.59

[a] Difference between groups ($P < .05$).

total participants, 297 (29.5%) scored high on the depersonalization subscale, 141 (47.5%) from the group that had provided care for athletes exposed to a catastrophic event and 156 (52.5%) from the group that had not.

The CISS Scores

The MANOVA was significant for group ($F_{3,1003} = 3.18$, $P = .024$). Follow-up 1-way ANOVAs indicated that task-oriented coping and emotion-oriented coping were significantly different for group. Avoidance was not different ($P > .05$). Task-oriented coping displayed a mean difference between groups of 0.46 points ($F_{1,1006} = 5.04$, $P = .025$, $1 - \beta = 0.611$); emotion-oriented coping displayed a mean difference between groups of 0.64 points ($F_{1,1006} = 4.23$, $P = .04$, $1 - \beta = 0.538$). The descriptive statistics for the CISS scores are shown in Table 4.

DISCUSSION

Approximately half of the ATs in our sample had provided care for athletes exposed to a catastrophic event. The ATs who had provided such care experienced lower levels of personal accomplishment than those who had not. This supported our hypothesis that ATs who had catastrophic-event exposure would experience higher levels of burnout; however, the scores on the other 2 subscales of the MBI-HSS, emotional exhaustion and depersonalization, were not different between groups. Two subscales of the CISS, task- and emotion-oriented coping strategies, showed higher mean scores in the exposure group than in the group that had not been exposed to catastrophic events, but scores on the avoidance-oriented coping strategy subscale did not differ. Also, although mean scores were different between groups, the differences on the emotion-oriented (0.64) and task-oriented (0.46) subscales of the CISS were small. Task-oriented coping strategies were used most often and emotion-oriented coping strategies were used least often for both groups. Our sample size was large, and the differences were statistically significant, but the clinical relevance may be minimal. Additionally, a majority of our sample, regardless of group, demonstrated low scores in personal accomplishment. This is rather alarming and should be further investigated.

The NATA does not have information detailing exposure to catastrophic events among ATs; however, the association does provide recommendations for managing many of the leading causes of catastrophic events in athletics. Position statements include guidelines for identifying disqualifying conditions through preparticipation physical examinations[13]; preventing sudden death[12]; and managing acute cervical spine injuries,[14] concussions,[15] and exertional heat illness.[16] During the most recent reporting year (2017), the NCCSIR showed a 20% increase in catastrophic athletic events over the previous year.[6] The leading causes of catastrophic injuries reported at all levels were related to the heart (30.7%), cervical spine (30.7%), and brain and head (20.8%)[6]; most of these events occurred among football athletes. A thorough understanding of the NATA position statements developed to aid ATs in managing these conditions could help them provide the appropriate care for athletes who suffer catastrophic events.

Emergency department nurses who cared for patients with traumatic injuries experienced burnout at much higher rates than nurses in other settings and those without exposure to traumatic events.[4] These differences were not found between groups of ATs who had or had not provided care for athletes exposed to a sport injury event. The differences between the nursing and athletic training populations could be due to several factors, including variances in job demands, different frequencies of exposure to catastrophic events, and resources available after the event.

A previous study[5] revealed that up to one-third of all ATs experienced symptoms of burnout during their careers; similarly, we found that 38.3% reported high scores on the emotional exhaustion subscale of the MBI-HSS, and 29.5% of the ATs surveyed reported high scores on the depersonalization subscale of the MBI-HSS. More alarmingly, 83.3% of our participants reported a low personal accomplishment score, which is a manifestation of burnout. This raises red flags as many athletes rely on their AT for social support.[2] Earlier authors[5] explored burnout rates and had findings similar to ours.

This study was motivated by a lack of information pertaining to how caring for athletes can affect an AT's well-being. Future researchers could explore sex differences, workplace differences, how repeated exposures to catastrophic events can affect a caretaker, and the specific nature of catastrophic events (eg, fatalities, permanent disability). Investigators[3,4] have examined burnout rates among populations of other health care professionals as well as symptoms of depression, anxiety, and posttraumatic stress disorder. Our study could have benefited from assessments of symptoms of depression, anxiety, and posttraumatic stress disorder among ATs who had or had not been exposed to catastrophic athletic events. Additionally, coping resources that ATs use should be explored.

Our results could benefit ATs by raising awareness of the possible psychological implications of providing care during a catastrophic event. Athletic trainers may be more likely to seek help from others after a catastrophic event if they are more aware of how common symptoms of burnout are in the aftermath. In addition, ATs may be better prepared to help peers who have provided care for athletes exposed to a catastrophic event if they are cognizant of the stresses it can cause.

However, several limitations to our study existed. First, our response rate (10.2%) was lower than what is typically reported in athletic training research (approximately 30%[17]). Still, the distributions among our groups (catastrophic-event care, sex, and years of experience) were satisfactory. Second, ATs suffering symptoms of burnout may be less likely to participate in voluntary research studies. Another limitation to our study could have been that the length of the surveys discouraged participation. Finally, our results were heavily skewed toward ATs working in collegiate and secondary school settings.

CONCLUSIONS

Catastrophic athletic events can have significant effects on those involved in the care of the affected athletes. Those ATs who have provided care to athletes exposed to a catastrophic event could be more likely to suffer from a lack of personal accomplishment and exhibit task- and emotion-oriented coping behaviors. Lastly, personal accomplishment should be further explored among ATs in general, as a majority of our ATs scored low in this area, regardless of whether they had provided care for an athlete exposed to a catastrophic event.

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